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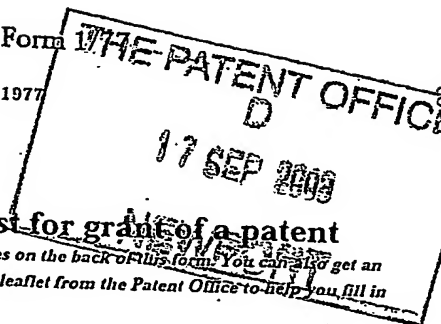
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18SEP03 E838101-1 C00537  
POL/7700 0.00-0321832.8

# Request for grant of a patent

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The Patent Office

Cardiff Road  
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NP10 8QQ

1. Your reference

Aims

2. Patent application number

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17 SEP 2003

0321832.8

3. Full name, address and postcode of the or of each applicant (underline all surnames)

584425002

~~0871637 5001~~  
Patents ADP number (if you know it)

MANN AVIATION GROUP (ENGINEERING) Limited  
~~Alan Mann Group (Engineering) Limited~~  
Fair Oaks Airport  
Chobham  
Woking  
Surrey GU24 8HU

If the applicant is a corporate body, give the country/state of its incorporation

England

51  
Full  
28/10/

4. Title of the invention

Control Station

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Ipsca Consulting Limited  
Northpoint House  
52 High Street  
Knaphill  
Surrey GU21 2PY

Patents ADP number (if you know it)

07423692002

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
  - c) any named applicant is a corporate body.
- See note (d))

## *CONTROL STATION*

### *Field of the Invention*

This invention relates to a control station and, in particular, to a control station for use in aircraft.

### *Background of the Invention.*

Aircraft, particularly helicopters, are being used, increasingly, for surveillance operations by services such as the police. To be effective in such roles, the aircraft must be fitted with a number of accessories such as search lights, cameras, sirens etc.

Each accessory has its own control. Typically the controls for all accessories are mounted on a separate console situated within the aircraft. Thus, such a console will include a number of display monitors and a number of individual hand controls.

A consequence of equipping an aircraft with a console as described above, is that a significant part of the aircraft interior is occupied by the console, and this limits the ability of the aircraft to be used for non-surveillance activity. Further, the multiplicity of individual monitors and controls increases the possibility of operator error.

It is an object of this invention to provide a method of and/or means which addresses the abovementioned problem; or which will at least provide a novel and useful choice.

### *Summary of the Invention*

Accordingly, in a first aspect, the invention provides a method of controlling the operation of a plurality of accessories mounted on the outside of an aircraft, said

method including directing control elements for each of said accessories to a single visual display unit (VDU) and a single hand manipulation device.

Preferably said method further includes combining a selection facility with said VDU whereby one of said accessories may be selected to fall under the control of said manipulation device.

Preferably said method further includes mounting said VDU and said manipulation device on a control station, such that said control station may be positioned adjacent to an aircraft seat.

Preferably said method includes mounting said VDU in an adjustable manner such that the position thereof may be varied between one in which said VDU is positioned in front of an operator seated in said seat, and a position in which said VDU is positioned to one side of said seat and does not inhibit entry into, or exit from, said seat.

In a further aspect the invention provides a control station for use in conjunction with a plurality of accessories mounted on the exterior of an aircraft, said control station including means to support a single Visual Display Unit (VDU) and a manipulation device responsive to information displayed on said VDU, the invention being characterized in that:

functional elements of all of said accessories are lead to said VDU;

said control station is associated with, but not fixed to, an aircraft seat; and

the position of said VDU may be varied between one in which said VDU is directly in sight line of an operator positioned in said seat, and one in which said VDU is positioned to one side of said seat.

Preferably said control station includes a selection facility whereby the accessory to be control may be selected.

Preferably said selection facility is included within said VDU.

Preferably said manipulation device is hand operable.

Preferably said manipulation device comprises a joy stick.

Preferably said control station includes a receptacle positioned to one side of said aircraft seat, said VDU being locatable within said receptacle.

Many variations in the way the present invention can be performed will present themselves to those skilled in the art. The description which follows is intended as an illustration only of one means of performing the invention and the lack of description of variants or equivalents should not be regarded as limiting. Wherever possible, a description of a specific element should be deemed to include any and all equivalents thereof whether in existence now or in the future. The scope of the invention should be limited by the appended claims alone.

#### *Brief Description of the Drawings*

One form of control station incorporating the various aspects of the invention will now be described with reference to the accompanying drawings in which:

Figure 1:        shows an schematic view of a control station according to the invention;

Figures 2A: show isometric views of a control station according to the invention to 2C in different configurations; and

Figure 3: shows an enlarged front view of a Visual Display Unit (VDU) incorporated in a control station according to the invention.

### *Detailed Description of Working Embodiment*

Referring firstly to Figure 1, the present invention provides a control station 5 through which the operation of a number of accessories  $a^1, a^2, a^3, a^4 \dots$ , attached to the exterior of an aircraft, can be individually controlled.

The term accessory, as used herein, is intended to mean any item of equipment added to the exterior of an aircraft which requires an element of control. In the case of surveillance aircraft, this could include one or more searchlights, cameras and other tracking devices.

In the past, surveillance aircraft provided with such accessories, have been fitted with a console having individual displays and manipulation controls for each item of equipment. As a consequence, significant space is occupied by the console and this limits use of the aircraft for other purposes unrelated to surveillance.

As can be seen diagrammatically in Figure 1, according to the invention, control lines from each of the items  $a^1 \dots a^4$  is lead to a switching unit 6 and, from the switching unit 6, a single line leads to the control station 5 having a single Visual Display Unit (VDU) 8 and a single hand control 10. Individual controlling elements of the units  $a^1 \dots a^4$  can be stowed in the cargo hold of the aircraft.

Referring now to Figures 2A to 2C, the particular form of control station 5 described herein includes side sections 11 and 12 which, when the station 5 is positioned for use, straddle opposite sides of a seat 13. The seat itself does not form part of the invention and may take any desired or suitable form. The station 5 may be constructed so that the distance between the side sections 11 and 12 may be adjusted, thereby making the station adaptable for use with seats of different widths.

Mounted on the upper edge of the side unit 11 is the hand operated controller 10. In the form shown this comprises a joy stick but it could comprise a control ball or any other physical form of controller deemed to be appropriate.

The side section 12 comprises a housing or receptacle. Mounted adjacent the forward upper edge of the side section 12 is the VDU 8. In the form shown the VDU is mounted on a multi-axis pivot so that the unit may be pivoted back into the position shown in Figure 2B, about axis y, and then pivoted down about axis x for storage in the housing defined by side section 12. This stowed position is shown in Figure 2C.

A spring, gas strut or the like (not shown) may be provided to assist movement of the VDU 8 between the positions shown in Figures 2B and 2C.

In use, when surveillance is to be undertaken, the surveillance operator enters the seat 13 when the VDU is in the position shown in Figure 2B or Figure 2C. From the position shown in Figure 2C, the VDU 8 is pivoted around, in the direction of arrow 16, to the position shown in Figure 2A.

The operator may then operate the various accessories using hand controller 10 to establish position or alignment in response to images or other information displayed on the VDU 8.

Turning now to Figure 3, the VDU is preferably of the touch screen type and is mounted in housing 20. Provided in the housing 20, around the periphery of the screen 21, are a number of indicator lights and/or selection switches 22, by means of which the various accessories  $a^1$  ..  $a^4$  may be selected for operation, as well as other functions such as radio, GPS and map associated with surveillance operations. As can be seen, sections of the screen may indicate the functions of the adjacent switch or light.

Upon selection of a particular accessory, a visual menu may appear on the screen prompting the operator to make various selections or undertake particular tasks.

In the particular embodiment described herein, the VDU has a size of 18" by 18". This allows a split screen mode, indicated by the dotted line in Figure 3, to be selected. In this mode, two images may be viewed simultaneously.

The precise configuration of the displays, and their selection, does not form part of the invention and may take any desired form.

It will be appreciated that, upon completion of the surveillance operation, or when the aircraft is to be used for purposes other than surveillance, the VDU may be stowed in the position shown in Figure 2C. In this position, the control station 5 impacts only to a minor extent on the interior space of the aircraft.

It will thus be appreciated that the present invention, at least in the case of the particular embodiment herein described, provides a full sized, clearly visible control unit which allows a surveillance operator to readily control all his surveillance tools. However, when not in use, the tools can be stowed out of sight leaving the aircraft fully usable for other applications

## Claims

1. A method of controlling the operation of a plurality of accessories mounted on the outside of an aircraft, said method including directing control elements for each of said accessories to a single visual display unit (VDU) and a single hand manipulation device.
2. A method as claimed in claim 1 further including combining a selection facility with said VDU whereby one of said accessories may be selected to fall under the control of said manipulation device.
3. A method as claimed in claim 1 or claim 2 further including mounting said VDU and said manipulation device on a control station, such that said control station may be positioned adjacent to an aircraft seat.
4. A method as claimed in claim 3 including mounting said VDU in an adjustable manner such that the position thereof may be varied between one in which said VDU is positioned in front of an operator seated in said seat, and a position in which said VDU is positioned to one side of said seat and does not inhibit entry into, or exit from, said seat.
5. A control station for use in conjunction with a plurality of accessories mounted on the exterior of an aircraft, said control station including means to support a single Visual Display Unit (VDU) and a manipulation device responsive to information displayed on said VDU, the invention being characterized in that:
 

functional elements of all of said accessories are lead to said VDU;

said control station is associated with, but not fixed to, an aircraft seat; and

the position of said VDU may be varied between one in which said VDU is directly in sight line of an operator positioned in said seat, and one in which said VDU is positioned to one side of said seat.

6. A control station as claimed in claim 5 further including a selection facility whereby the accessory to be control may be selected.
7. A control station as claimed in claim 6 wherein said selection facility is included within said VDU.
8. A control station as claimed in any one of claims 5 to 7 wherein said manipulation device is hand operable.
9. A control station as claimed in claim 8 wherein said manipulation device comprises a joy stick.
10. A control station as claimed in any one of claims 5 to 9 wherein said control station includes a receptacle positioned to one side of said aircraft seat, said VDU being locatable within said receptacle.

## ABSTRACT

### *CONTROL STATION*

The invention provides a control station for use on surveillance aircraft. Controls for each surveillance accessory (lights, cameras etc) are lead to a station having a single VDU and a single hand control. The VDU and hand control are mounted on a station which co-operates with, but is unattached to, a seat and the VDU may be displaced to allow easy entry into, and exit from, the seat.

(Use Figure 2A)



FIGURE 1

FIGURE 2c

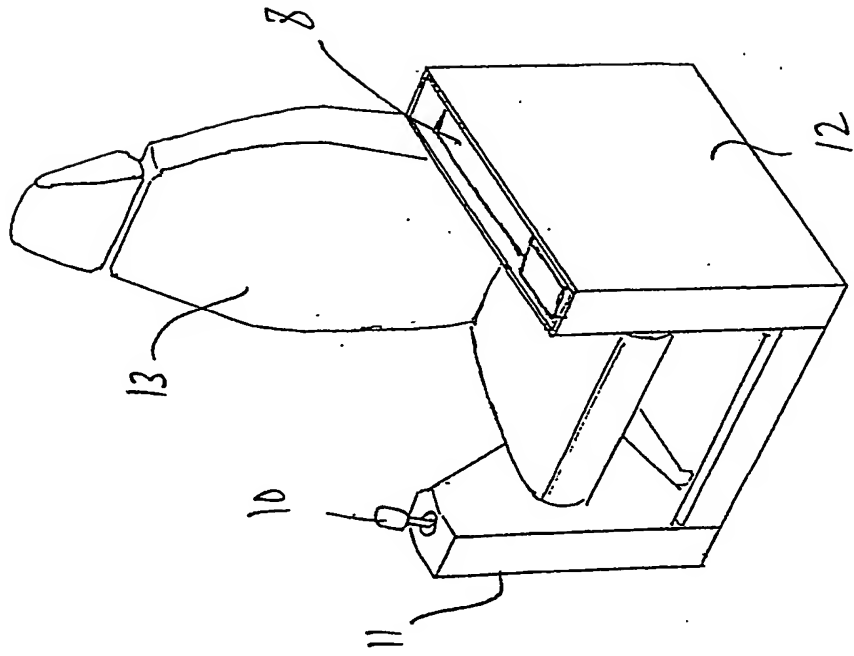


FIGURE 2b.

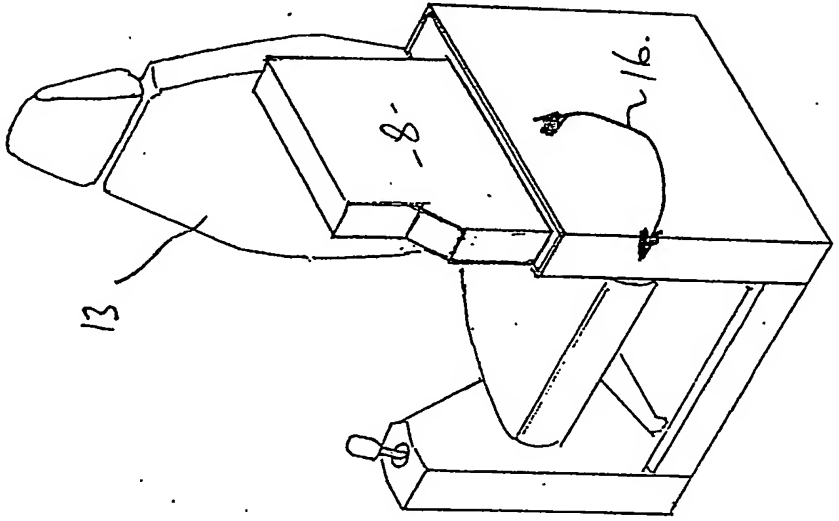
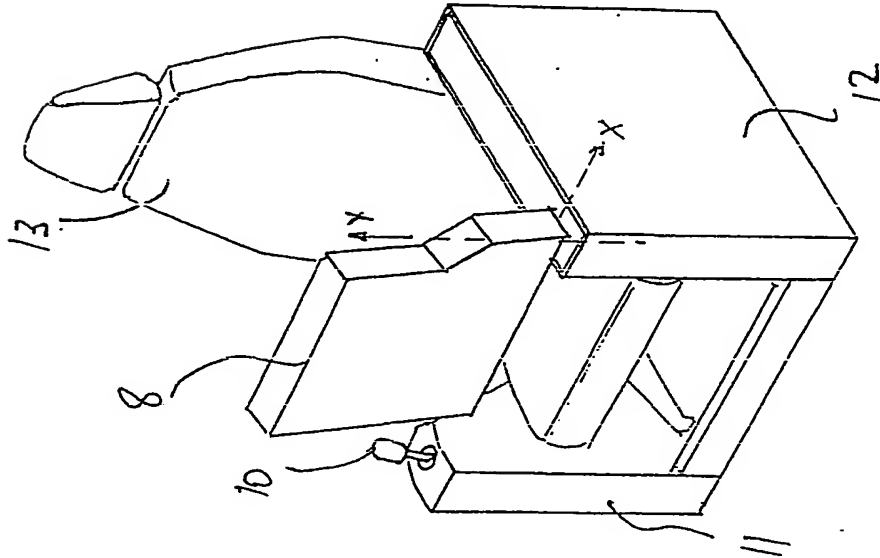


FIGURE 2A



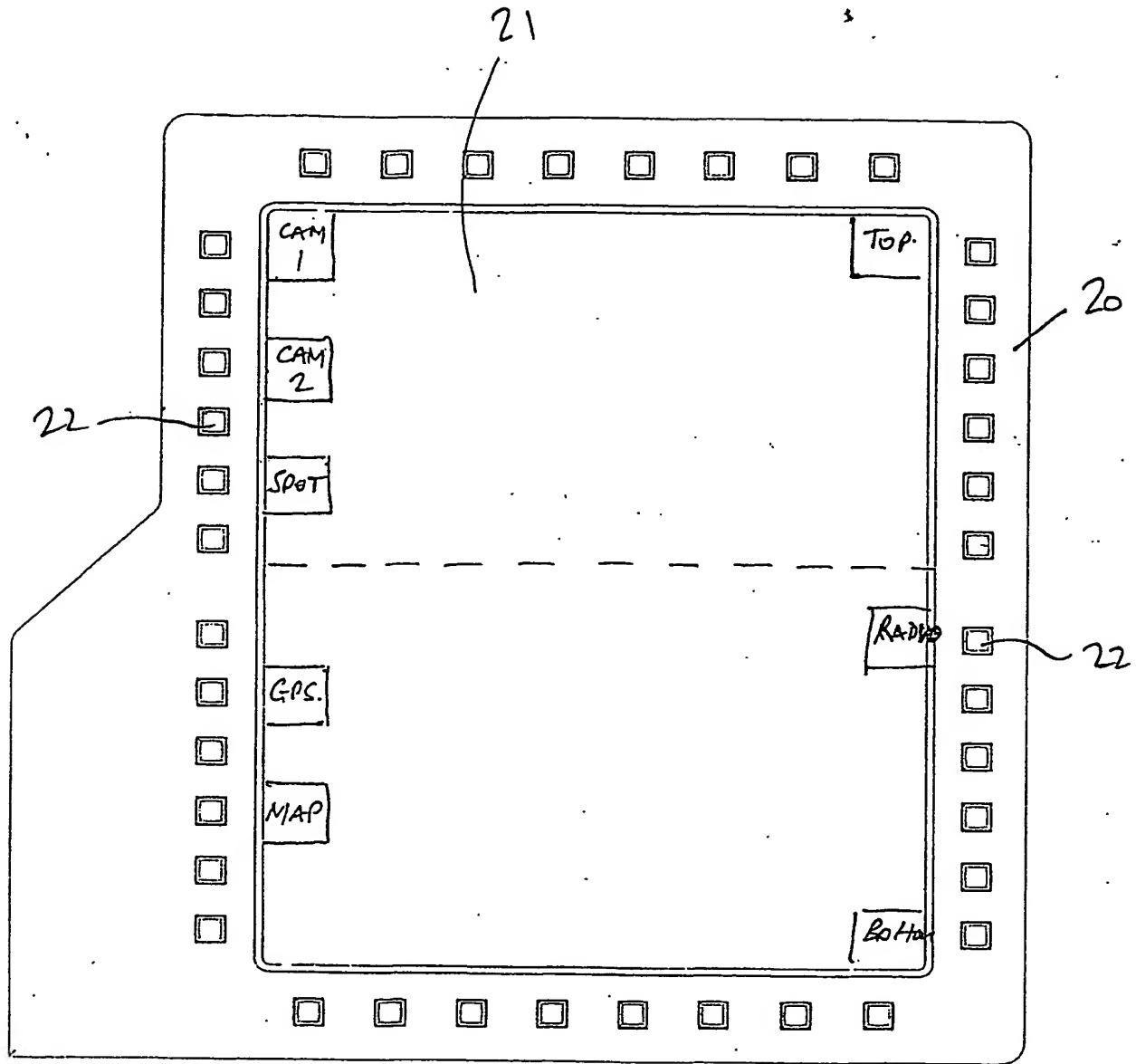


FIGURE 3.